STATISTICAL BULLETIN

Metropolitan Life Insurance Co.

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THE POSSIBLE EXTENSION OF HUMAN LIFE.

The expectation of life in 1910, according to the life tables for the Registration States, was fifty-one and one-half years. What does this figure mean? A great many people die in infancy, some live to be octogenarians, and others exceed even this advanced age. But, the duration of human life, on the average, from birth to death, under conditions prevailing in 1910 was fifty-one and one-half years. The average has been very much increased during the last half century, a period which has seen the development of the modern public health movement. In fact, when the life tables for Massachusetts were prepared in 1855, the expectation was eleven years less than in 1910. These eleven years may be credited to the improvement in conditions of life in the fifty-five years intervening between the two sets of tables.

There is evidence on all sides that the expectation of life can be still further increased by extending the work which has resulted in the gain of eleven years. It is obvious that at least one-third of the deaths that occur every year may be prevented or postponed. In some communities, the proportion of such deaths may reach even one-half. We say "prevented" for such causes as automobile accidents, which can undoubtedly be diminished in many instances by greater community effort. Diphtheria deaths are likewise "preventable;" for the use of toxin-antitoxin will prevent many cases from occurring and the early use of antitoxin in cases which do occur will, in most instances, prevent death from this disease. There are other diseases which are "preventable" in this sense. Many deaths from tuberculosis are preventable, for, through the agency of tuberculosis clinics, cases of tuberculosis may be discovered in the incipient stage when the progress of the disease can be arrested. These and

other health measures can, in like manner, postpone death for many years in cases of tuberculosis which are discovered even in advanced stages. Many deaths from cancer, from heart disease and from Bright's disease can be postponed for longer or shorter periods through discovery of the cases in the early stages and through the application of surgical, medical and nursing care. This is not a speculation, but a fact which is being demonstrated every day in every large community of the country where good public health work is being done.

Facts such as these raise the question as to how far life may be prolonged. It is impossible to put very definite limits upon longevity for human beings. We know that we may hope for the control of much of the needless loss from some definite diseases. With this thought in mind, the number of years of life that are lost to the expectation because of certain conditions, such as tuberculosis, heart disease, cancer, Bright's disease and others has been calculated and the following interesting results obtained. The loss of life from tuberculosis is equivalent to a reduction of three years in the life span for white people and over five years for colored people. Cancer deaths reduce longevity by one and one-fourth years among white lives and by one-half of a year among colored lives; deaths from heart disease by one and three-quarter years among both white and colored persons; Bright's disease by one and one-quarter years among white and colored persons and accidents a little more than one year among white and colored persons. These five conditions together reduce the span of human life by about eight and one-half years among white persons and by about nine and one-half years among colored people. Such then are the losses of expectation due to a few causes of death.

Obviously, not all of these losses can be controlled. Many of the deaths from these diseases occur among old people; others are for various reasons not preventable or postponable in the present state of medical science. On the other hand, many such deaths can be controlled and a significant part of the total loss may be conserved. The movement against tuberculosis is still capable of extension and those against cancer, heart disease and Bright's disease have scarcely been launched. The future alone will indicate how many years can be added to the expectation of life by an attack upon these sources of loss.

There are other diseases which are even more promising as fields of life extension than those we have named. Let us take, for example, the diseases which lead to the deaths of children during the first

year of life. Fifteen per cent. of all the deaths that occur in the United States and Canada are among children under one year of age. Every such death cuts deep into the expectation, because the death of each child under one year of age involves a loss of fifty years of possible life to the community; whereas, the death of a person at, say 60 years, produces only a loss of about fifteen years of life. Therein lies the great promise of infant hygiene work in the attempt to extend the expectation of life. Moreover, nothing in the realm of public health work is relatively easier of accomplishment than the control of excessive infant mortality. It has been demonstrated many times that high infant mortality can be cut one-half almost from the beginning through the development of proper health measures. How many years would be added to the total expectation of life by reducing infant mortality fifty per cent.? The answer is three and one-half years under the conditions which prevailed during the last decade. How much, in like manner, may be added through control of the communicable diseases of childhood? This, too, is a large figure.

We cannot to-day say what are the possibilities of life extension. There are too many unknown factors involved; but it is entirely consistent with the known facts to assert that the duration of human life may be extended considerably more than ten years and the expectation raised from fifty-one and one-half to sixty-five years by the application of conservation measures very well known to the medical and public health professions. Nor shall we need to wait fifty years for this achievement. It is only a question of developing sufficient and persistent popular understanding and support for those measures which have already demonstrated their worth in the health campaign. The year 1930 should see a large part of this addition to the life span accomplished.

TUBERCULOSIS IS INCREASING AMONG ADOLESCENT GIRLS.

Despite the very pronounced decline in the mortality from tuberculosis which has taken place during the last decade, the disease is actually increasing among girls between the ages of fifteen and twenty years. This is shown clearly by figures compiled by the Metropolitan Life Insurance Company which relate to the ten-year period 1911 to 1920. Adolescent girls constitute the only group in which the tuberculosis death rate has not declined.

The Company's compilations show that during the six-year period 1911 to 1916, the average annual death rate from tuberculosis among white girls, aged 15 to 19 years and insured in its Industrial Department was 144.5 per 100,000; by 1919, this rate had increased slightly (to 145.8), and in 1920 it rose further to 151.5. These increases, it is true, are small; ordinarily, they would not be commented upon. They become very important and significant, however, by virtue of the strong contrast which they present to the trend of tuberculosis mortality among both females and males of other age groups. For example, women from 20 to 24 years had an average death rate from tuberculosis of 238.0 per 100,000 during the six-year period 1911 to 1916; by 1919, this had decreased to 228.4; in 1920, there was a further and very substantial drop to 213 8. For insured white women aged 25 to 34 years a death rate of 252.2 was recorded for the six-year period 1911–1916; by 1919, the figure had declined to 214.3 and in 1920 there was a further drop to 190.5

During the same time that the tuberculosis death rate of adolescent white girls was increasing 5 per cent. the mortality among adolescent white boys was decreasing 25 per cent.

As early as March, 1921, we called attention in this BULLETIN to the increase in tuberculosis among young girls as the one anomaly in a situation where favorable developments were in evidence for every other age group. Since that time the attention of students of the tuberculosis problem has been directed more or less toward this phase of the situation. We have not, as yet, heard any satisfactory explanation of the causes which have brought about the comparatively high tuberculosis death rate among adolescent females. One suggested explanation that present-day fashions in dress have much to do with it is obviously unsound. We must seek other facts to explain the observed differences between the death rates of females of other age periods and of those between 15 and 20. So far as we know, there are no fundamental differences in housing conditions and employment surroundings for females of the two age groups. Certainly there is no reason to believe that whatever changes have occurred in these important matters apply more to any one group than to the others. Further research into this important subject is called for, and we would suggest that more careful attention be given to the physiological aspects of the question. It would be well to find out whether the increasing number of young girls who have entered industry in recent years at these adolescent ages (when physiological changes are more pronounced among them than among boys) is having any effect in bringing about the increased death rate.

SOME OF THE CONCLUSIONS CONTAINED IN A PROGRESS REPORT OF THE INFLUENZA COMMISSION OF THE METROPOLITAN LIFE INSURANCE COMPANY

In the summer of 1919 the Influenza Commission of the Metropolitan Life Insurance Company was organized and is now in the third year of its work. Additional appropriations to assist the Commission in the study of influenza phenomena have been made by the University of Chicago and by Harvard and Johns Hopkins Universities, and the Commission has also benefited by the active cooperation of the United States Public Health Service, several state boards of health and city health departments, as well as many hospitals, laboratories and other agencies.

The Commission has recently made a "Progress Report," some of the most important items of which are as follows:

1. It seems clear that one attack of influenza does not protect against subsequent attacks as in the case of smallpox, measles, typhoid fever and many other diseases. The immunity following an attack of influenza is brief and feeble. The evidence indicates that whatever immunity may remain after an attack of the disease disappears within a year.

2. The vaccines tried do not protect against influenza. The result of vaccination against pneumonia is uncertain and not particularly encouraging so far as the vaccines used are concerned.

3. The so-called influenza bacillus of Pfeiffer is not the true cause of influenza although it is often a secondary invader and thus aggravates the disease or produces complications.

4. As pneumonia is the most frequent cause of death in influenza cases the Commission is devoting much time to its prevention and treatment. For this purpose, the Boston City Hospital has arranged a special pneumonia service of about fifty beds which have been put at the disposal of the Commission. All the protective mechanisms of the body are being studied systematically upon these cases. A pneumonia service has also been organized at Bellevue Hospital, New York, where over 500 cases of pneumonia have been treated by a special specific method. An equal number of cases has been treated by the current expectant or symptomatic methods and serves as a control group. The results of this study are encouraging, but no statement will be made until more data are available.

5. The Commission believes that one of the most pressing problems is the identity of the microorganism primarily responsible for

the influenza pandemics and of the principal microorganisms causing the complications.

6. While the Commission found the influenza bacillus in practically every case of influenza, it was found almost as often, also, in cases of whooping cough, measles and common colds.

7. It was definitely developed that there were many different strains of influenza bacilli.

8. The Commission recognized that very many healthy persons are carriers of influenza bacilli.

9. The Commission feels that in demonstrating that neither the influenza bacillus nor any of the other well known respiratory germs are the cause of influenza, it has prepared the ground for the search for new microorganisms.

10. The crucial point as to the relation of the Pfeiffer bacillus to influenza was subjected to experimental test by the inoculation of volunteers with these organisms. The report is that while the results were not so clear-cut as might be desired, it may safely be said that influenza was not produced.

11. The sickness rate and the death rate for influenza are by no means parallel; there may be a high attack rate and a low death rate and vice versa. This indicates that we must look further for the particular conditions which contribute to a higher fatality, and that if we can control these we may be able to greatly decrease the death rate even if we cannot control the attack rate.

12. A significant fact to which the Commission calls attention is that the epidemic of 1918 was not of such sudden development as it appeared to be. In the United States, at least, it was preceded by definite increases in deaths from pneumonia occurring almost simultaneously throughout the country in the spring of 1918 and less definitely in 1916 and 1917.

13. Comprehensive surveys of many thousands of cases of influenza were made in Boston and also in Baltimore. The facts obtained from these intensive studies are being correlated with the occurrence of the disease elsewhere. These epidemiological investigations disclose not only the medical and sanitary aspects of the disease, but also consider its social and economic relations.

HEALTH RECORD FOR NOVEMBER, 1921.

Health conditions among Metropolitan Industrial policy-holders continued favorable during November, although an increase in the death rate was registered as compared with October. This is ex-

pected in view of the fact that the mortality from epidemic diseases, respiratory conditions, and from several of the important organic diseases usually rises at this time of the year. Nevertheless, the rate for all causes combined (8.4 per 1,000) is low; it is about the same as prevailed for November, 1920.

The outstanding item in the excellent general health situation is the remarkably low tuberculosis rate. In any normal year we would expect a considerable increase in the mortality from tuberculosis in November as compared with October. But this year the death rates for the two months are identical as well as unprecedentedly low. During November of last year the figure for tuberculosis was 114.4 which, up to that time, was the minimum rate ever recorded during this month in the Industrial Department. Our figures at this time indicate that it is highly probable that for the first time in the history of the Metropolitan Industrial policy-holders, tuberculosis will actually be displaced from the position it has long held as the leading cause of death. Organic heart disease is the cause which will probably head the list for 1921. This condition has also shown a considerable decrease over last year's mortality record; but the decline has by no means kept pace with the remarkably favorable showing made by tuberculous diseases. The pneumonia rate rose considerably in November and is 13 per cent. higher than recorded for the same month of last year. As compared with other years, however, it remains low. Puerperal conditions, cerebral hemorrhage and Bright's disease also registered increases in November as compared with October, and in each instance the rate is higher than for November of 1920. Nevertheless, the year-to-date rate for each is lower than at this time last year.

There are several conditions for which the situation is unfavorable. The outstanding one is diphtheria. We have called attention many times to the bad diphtheria situation which has prevailed for about two years. Conditions are getting progressively worse month after month. The diphtheria death rate for November was 30.7 per 100,000. This is the maximum for 1921, to date. It is not quite as high as that recorded in November, 1920, but our records for the year, to date, show that the diphtheria death rate for the period January-November of this year is even higher than the very bad record for these months in 1920. We believe to-day that there is no more urgent demand upon the public health movement than that of diphtheria control. The method of such control is known. It is Schick testing and the administration of toxin-antitoxin to those whom the Schick

test shows to be susceptible. The public must be made to recognize this. In this way alone, shall we check the ravages of diphtheria. The 1921 death rate for this disease, in all probability, will actually be higher than those which prevailed in the Industrial Department five or six years ago.

There was a considerable decline in the suicide rate in November and there were slight decreases for homicide and automobile accidents. In the case of each of these three, however, the death rate for the first eleven months is higher than for the same period last year. This is true, especially, of suicide.

The health situation among the general population of the large cities continues favorable. As expected, there was a slight rise as compared with October, the November rate being 11.6 per 1,000 population as against 11.1 in October. There was a slight decline, however, as compared with November of last year.

Lower morbidity was reported from typhoid fever, whooping cough, lethargic encephalitis, poliomyelitis and malaria. Scarlet fever, smallpox, measles and influenza increased, but, with the exception of smallpox, there were no serious epidemics.

Smallpox was very prevalent in Missouri, Washington, California, Kansas, Wisconsin, Minnesota and Montana. In Kansas City, Missouri, there has been a severe outbreak of the disease in virulent form. Out of 285 cases reported between September 1st and December 1st, there were 100 deaths. There has been much voluntary vaccination in recent weeks and the outbreak now appears to be on the decline. For the week ended November 26th, the average number of cases per day was less than 6; for the two preceding weeks it was more than 8. The office of the State Attorney General on December 2d handed down its opinion that the State Board of Health has the authority to require vaccination in communities where an emergency exists by reason of contagious disease. On November 29th, the city of Joplin, Mo. made effective a quarantine against persons arriving on trains from Kansas City. In Independence, Mo., a few cases of a severe type of smallpox were reported and the city physician advised everyone to be vaccinated. There was also an outbreak of the disease at Sugar Creek in the same state. A serious epidemic of smallpox has prevailed in the Northern Neck Counties of Virginia. The disease first appeared in Westmoreland County, spread to Richmond County and finally to Northumberland County. The cases in the Virginia epidemic were mild in type.

Diphtheria cases were reported in large numbers from Illinois, Kansas, New York, California, Indiana, Missouri, Massachusetts, North Carolina and New Jersey. In Kansas, the peak was reported in the last week of October. In Columbus, Ohio, diphtheria has been more prevalent this year than at any time during the last twenty years. The public press of the city has been helping the health authorities to control the disease by recommending the early calling of a physician in suspicious cases and advising the use of antitoxin. There was an outbreak of the disease among the prisoners in Ossining, New York.

New York, Illinois, Indiana and Maryland reported the most typhoid fever. There was an outbreak of 11 cases in East Granby, Conn. This is believed to have been due to a typhoid carrier. There were 8 deaths in Columbus, Ohio, 6 of these being those of non-residents.

Fewer cases of poliomyelitis were reported during the month. Washington, California, and New York reported the largest numbers.

Progress in Health Protection

Among the important public health activities of the month may be mentioned the campaign of the American Society for the Control of Cancer. Lectures were given in over forty Nebraska counties. The Delaware Society for the Control of Cancer effected a permanent organization this month. Philadelphia opened the first municipally owned and operated radium clinic in the United States on November 30th at the Philadelphia General Hospital. The Boston Instructive Visiting Nurse Association states that probably 60 per cent. of the deaths among cancer patients cared for by the Association last year might have been saved by early treatment. The Public Health Committee of the New York Academy of Medicine recommended that a hospital bureau be established in New York to facilitate the work of the various hospitals in the State, both private and municipal. A central hospital bureau to serve as a clearing house of information for the convenience of patients, hospitals and public was advocated. The number of beds in the State is sufficient to meet the present demands, but the need for accommodations for convalescent and chronic cases is great. Roosevelt Hospital in New York City celebrated its fiftieth anniversary. More than a million cases have been treated in its dispensary at an average cost of 25 cents a visit. According to the Forty-third Annual Report of the United Hospital Fund of New York, 57 of the leading non-municipal hospitals have spent 93 cents out of every dollar received in the last year directly

upon the patients. The Allegheny County Medical Society passed a resolution urging that the City of Pittsburgh assume the responsibility of obtaining immediate and proper hospital facilities for all sick and injured citizens who are unable to pay for hospital attendance, and suggesting the establishment in the Department of Public Health of a clearing office for hospital beds available for charity patients.

A committee appointed by the Virginia Legislature in 1920 reports that there are approximately 24,000 persons in the State suffering from active tuberculosis. In Ohio, tuberculosis clinics will be held in forty counties under the auspices of the State Health Bureau in cooperation with city health commissioners and with specialists in diseases of the chest. A conference was recently held at Brockton, Mass., to plan a survey of the tuberculosis situation in Plymouth County and to form an organization to conduct an anti-tuberculosis campaign. The Dorchester, Massachusetts, Tuberculosis Association began a campaign to secure increased membership and to bring before the people of the town and county facts that should be known about the disease. The North Carolina Board of Health has created a position in the County Health Division, the duty of the occupant of which will be to take charge of the installation of new health departments in the counties of that State. In Indiana, the State Board of Health has established a division to be known as the Housing Division. The Iowa Child Welfare Research Station at the State University has organized a laboratory in child psychology for experimental work with children from 2 to 4 years of age. The Governor of Alabama has approved the act appropriating $25,000 for treatment at the Pasteur Institute of indigent persons who have been bitten by rabid animals. The Board of Directors of the American Association of Industrial Physicians and Surgeons has appointed a committee to formulate a practical plan for supplying employee health surveys in small industrial plants. The Medical Society of Kings County, New York City, has adopted resolutions looking to the initiation of a campaign of education in preventive medicine. The medical societies of the other Boroughs of New York City have been invited to join the Brooklyn physicians in their movement to inform the public on "Social Disease and Degeneration and Waste of the Man-Power of the State." Definite arrangements have been completed by the Illinois Department of Public Health for conducting a school of instruction for health officers at Springfield, December 12th to 15th. The department will participate actively in the First Annual Meeting

of the Illinois State Welfare Conference at Peoria. The New York State Department of Health conducted a two weeks' institute in public health nursing, from November 28th to December 10th.

The table below displays the mortality among Industrial Policyholders for November and October, 1921, for November, 1920 and for the year 1920:

METROPOLITAN LIFE INSURANCE COMPANY.

Death Rates per 100,000 for Principal Causes, Premium-paying Business in Industrial Department.

(Annual Basis)

MONTHS OF OCTOBER AND NOVEMBER, 1921 AND OF NOVEMBER, 1920.

CAUSES OF DEATH	RATE PER 100,000 LIVES EXPOSED			
	Nov., 1921	Oct., 1921	Nov., 1920	Year 1920
TOTAL—ALL CAUSES	836.7	770.8	848.6	989.4
Typhoid fever	8.7	8.4	9.4	6.7
Measles	.6	.3	2.2	8.5
Scarlet fever	5.5	3.4	7.1	6.0
Whooping cough	1.6	1.3	2.7	6.6
Diphtheria	30.7	27.4	31.7	22.1
Influenza	5.2	3.6	5.7	53.5
Tuberculosis (all forms)	95.3	95.3	114.4	137.9
Cancer	70.1	69.5	70.6	69.8
Meningitis (all forms)	5.3	4.0	4.2	5.2
Cerebral hemorrhage	62.6	52.7	57.2	61.3
Organic diseases of heart	118.4	107.8	105.9	117.0
Pneumonia (all forms)	61.1	39.4	54.1	106.1
Other respiratory diseases	15.1	11.8	15.2	18.2
Diarrhea and enteritis	13.2	14.7	14.9	15.8
Bright's disease	69.1	62.2	65.7	70.8
Puerperal state	16.3	14.1	15.5	23.0
Suicides	5.9	8.4	6.1	6.1
Homicides	6.3	6.6	5.3	5.8
Other external causes (excluding suicides and homicides)	51.4	49.9	61.4	60.1
Traumatism by automobile	13.6	13.8	15.1	11.1
All other causes	194.1	190.0	199.2	188.9

Correspondence on the subjects discussed in these BULLETINS may be addressed to the Editor:

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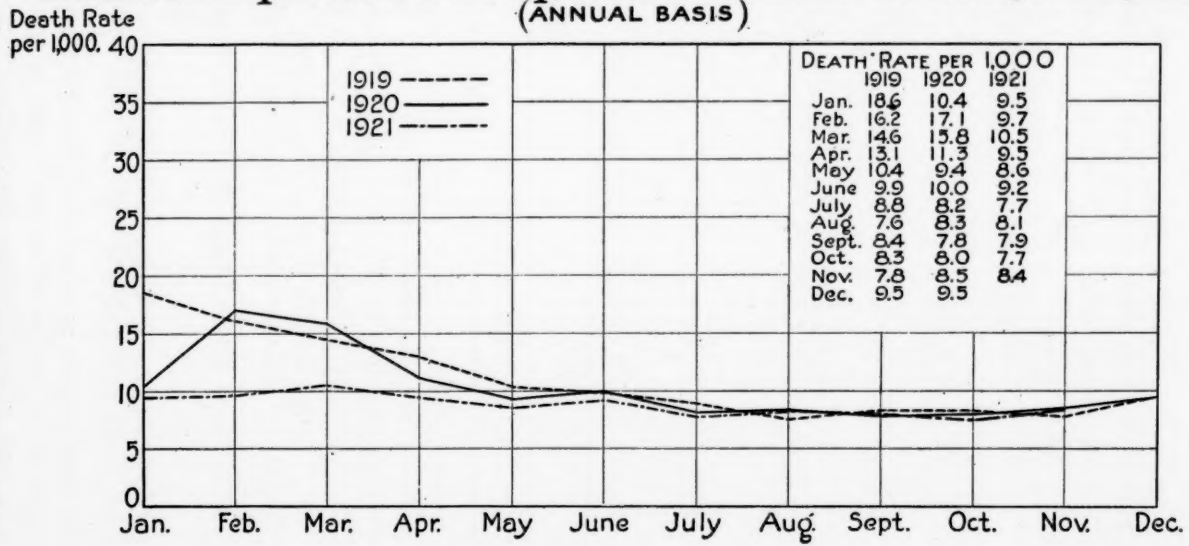
Metropolitan Life Insurance Co.

INDUSTRIAL DEPARTMENT

Death Rate per 1,000 in Specified Months of 1919, 1920, 1921.

(ANNUAL BASIS)



DEATH RATE PER 1,000	1919	1920	1921
Jan.	18.6	10.4	9.5
Feb.	16.2	17.1	9.7
Mar.	14.6	15.8	10.5
Apr.	13.1	11.3	9.5
May	10.4	9.4	8.6
June	9.9	10.0	9.2
July	8.8	8.2	7.7
Aug.	7.6	8.3	8.1
Sept.	8.4	7.8	7.9
Oct.	8.3	8.0	7.7
Nov.	7.8	8.5	8.4
Dec.	9.5	9.5	

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